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Sherri Sitzmann

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Sherri Sitzmann

(signature)

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:  
Sylvaine Leroy Delage

SERIAL NO.: **10/621,083**

FILED: 17 July 2003

TITLE: Cementing Compositions and the  
Use of Such Compositions for Cementing  
Oil Wells and the Like..

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DOCKET NO.: 55.0200CNT

GROUP ART UNIT: 3672

EXAMINER: Walker Zakiya  
Nicole.

### AFFIDAVIT UNDER 37 CFR 1.132

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

Bruno Drochon, being duly sworn, deposes and says:

1. I have read the patent application identified above and of the subject matter described and claimed therein.
2. I hold a Masters Degree in Chemistry from the Ecole Supérieure de Physique et de Chimie Industrielle de Paris, Paris, France and a Diplome d'études approfondies (DEA) in Analytical Chemistry (Paris VI University). From 1982 to 1987, I have worked as manager of a mass specrometry lab in a pharmaceutical research center (Rhône-Poulenc, France). From 1988 to 1997, I was the Section Head in the Analytical department of a chemical research center (Rhodia, France): In 1998, I joined the Cementing Group of the Schlumberger Technology Center SRPC based in Clamart,

France where I supervised the development of well and gas cement formulations and additives designed for such formulations, including fluid loss control agent, dispersing agent, set retarder. I am currently Technical and Lab Manager for the Completion Department of SRPC, and also responsible for organizing, testing, and evaluating technical projects to provide technical support to client and field locations throughout North and South America,

3. Let me know present the main differences between a dispersing agent and an anti-foam.
4. A foam is a collection of bubbles, ideally forming a structure of contiguous dodecahedra to which real foams approximate. Foam is governed by the properties of interfaces. Therefore, a foam does not occur with a pure liquid. Foams increase the total energy at the interfacial region, the area between the solvent and surface active agent. Persistent foams need surface active agents. Foams have a strong surface elasticity and resist external and internal stresses.
5. Antifoam prevents the formation of foam. Defoamer eliminates already present foam. Both are substances which spread on water to films with no surface elasticity and are strong foam breakers Antifoams consist of three main components
  - a) - a solvent, like water, is used to carry a hydrophobic active substance uniformly into a hydrophilic medium;
  - b) a surfactant-- a surface active agent; and
  - c) active substances, incompatible spreading/adsorptive compounds for foam destruction such as silicones.

To my knowledge, the top-two antifoams used in the oil and gas industry are diethylene glycol because it has a low vapor pressure and silicone. Both are non ionic compounds.

6. The role of the dispersing agents is to enhance the dispersion process and ensure a fine particle size in order to stabilize pigments in the solution. An efficient dispersant has to perform the three main functions : pigment wetting, dispersing, and stabilizing.. In term of chemical structure one can divide dispersing agents into the two following classe:

- a) – Anionic polymers;
- b) Comb polymers.

The ; main differences of those two types of dispersants being the molecular weight and the stabilization mechanism.

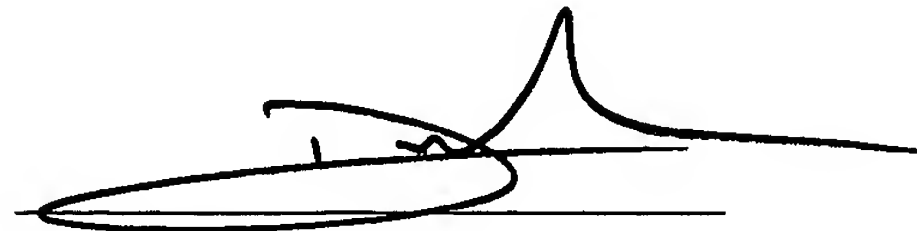
7. Anionic polymers act by absorption onto the pigment surface, the anchoring groups being generally carboxylic or sulfonic or their salts. The stabilisation mechanism is electrostatic: the polar groups forming an electrical double layer around the pigments particles. The Polynaphtalene Sulfonates and Polyacrylates are the main anionic polymers used for dispersing pigments in a water based formulation.

8. Comb polymeric dispersants stabilize systems via a steric stabilization mechanism. They have a two-component structure which combines the following two very different requirements:

- a) It must be capable of being strongly adsorbed into the particle surface and thereby possess specific anchoring groups (carboxylic or sulfonic)
- b) The molecule must contain polymeric chains that give steric stabilization in the required solvent or resin solution system.

9. From the above, it results that antifoam and dispersants address very different properties and are very different from the chemical point of view.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

A handwritten signature in black ink, consisting of a large, stylized 'B' followed by a horizontal line and a small upward stroke.

Bruno Drochon

Sworn and subscribed before me

this 16<sup>th</sup> day of June, 2004

A handwritten signature in black ink, featuring a large, stylized 'C' and 'M' followed by a horizontal line.

Catherine MENES  
European Patent Attorney